



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/484,259      | 01/18/2000  | David Coates         | MERCK1883-C1        | 9483             |

23599 7590 03/10/2004

MILLEN, WHITE, ZELANO & BRANIGAN, P.C.  
2200 CLARENDON BLVD.  
SUITE 1400  
ARLINGTON, VA 22201

EXAMINER

CHOWDHURY, TARIFUR RASHID

ART UNIT PAPER NUMBER

2871

DATE MAILED: 03/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/484,259

Applicant(s)

COATES ET AL.

Examiner

Tarifur R Chowdhury

Art Unit

2871

AW

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4,9-11,15,16,20 and 30-42 is/are pending in the application.
- 4a) Of the above claim(s) 11,16,36,39 and 40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4,9,10,15,20,30-35,37,41 and 42 is/are rejected.
- 7) ☒ Claim(s) 38 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/15/03 has been entered.

### ***Election/Restrictions***

2. Claims 11, 16, 36, 39 and 40 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 21.

In the remarks filed on 10/17/03, applicant mentioned that claims 11, 16, 36, 39 and 40 should be included with the examination claims once the claims upon which they depend are allowed since they are generic to the elected subject matter. However during the interview held on 06/05/2003, applicant's representative notified the examiner that once the application is ready for allowance all the claims that are related to only aluminum coating would be canceled (please refer to the substance of interview summary).

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

Art Unit: 2871

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-4, 9-11, 15, 16, 20 and 30-40 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Even though the applicant describes the use of  $\text{Al}_2\text{O}_3$  as an alignment layer, the aligning layer being sufficiently smooth so that liquid crystal films formed thereon can be removed in one piece is not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventor(s), at the time of the application was filed, had possession of the claimed invention.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-4, 9-11, 15, 16, 20 and 30-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase "such that" renders the claim indefinite since the resulting claim does not clearly set for the metes and bounds of the patent desired.

Further, the recitation that the surface of the aligning layer is "sufficiently" smooth does not define any structure and accordingly cannot serve to distinguish.

Art Unit: 2871

Also, the recitations that the liquid crystal films "can be" removed in one piece is not a positive limitation and thus does not constitute a limitation in any patentable sense.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**8. Claims 1, 4, 9, 10, 15, 30, 33, 34 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Krueger et al., (Krueger), USPAT 4,112,157.**

9. Krueger discloses in the abstract, a liquid crystal film or layer with homeotropic alignment, wherein the homeotropic alignment is achieved by an aligning layer on a substrate, and wherein the aligning layer is a Al<sub>2</sub>O<sub>3</sub> layer with a surface sufficiently smooth.

Accordingly, claims 1, 15 and 30 are anticipated.

Per claims 4 and 33, the substrate being subjected to corona discharge recitation is a product by process limitation. Regarding product by process limitations, see MPEP 2113.

Per claims 9 and 34, since the method of manufacturing the device is merely a list of forming each component and each component must be formed to make the device, the method of manufacturing would be inherent to the device.

Per claims 10 and 35, the claims add no new positively recited limitations.

**10. Claims 1, 4, 9, 10, 15, 30, 33, 34 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Bahadur (LIQUID CRYSTALS APPLICATIONS AND USES, vol. III, pgs 1-36).**

11. Per claims 1, 15 and 30, Bahadur discloses a liquid crystal film or layer with homeotropic alignment (see Fig. 5.13c) characterized that the homeotropic alignment is achieved by an aligning layer on a substrate (see Fig. 5.13c) and the aligning layer is an inorganic layer (the aligning layer is SiO or Al or Al<sub>2</sub>O<sub>3</sub>, see Fig. 5.13 description and table 5.3).

Per claims 4 and 33, the substrate being subjected to corona discharge recitation is a product by process limitation. Regarding product by process limitations, see MPEP 2113.

Per claims 9 and 34, since the method of manufacturing the device is merely a list of forming each component and each component must be formed to make the device, the method of manufacturing would be inherent to the device.

Per claims 10 and 35, the claims add no new positively recited limitations.

**12. Claims 1, 4, 9, 10, 15, 30, 33, 34 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Kwarada et al., (Kwarada), USPAT 4,490,015.**

Art Unit: 2871

13. Kawarada discloses (col. 3, lines 63 – col. 4, line 5; col. 8, lines 51-55; col. 9, lines 4-6), a liquid crystal film or layer with homeotropic alignment, wherein the

homeotropic alignment is achieved by an aligning layer on a substrate, and wherein the aligning layer is a  $\text{Al}_2\text{O}_3$  layer with a surface sufficiently smooth.

Accordingly, claims 1, 15 and 30 are anticipated.

Per claims 4 and 33, the substrate being subjected to corona discharge recitation is a product by process limitation. Regarding product by process limitations, see MPEP 2113.

Per claims 9 and 34, since the method of manufacturing the device is merely a list of forming each component and each component must be formed to make the device, the method of manufacturing would be inherent to the device.

Per claims 10 and 35, the claims add no new positively recited limitations.

***Claim Rejections - 35 USC § 103***

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

Art Unit: 2871

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**16. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Krueger or Bahadur or Kwarada as applied to claim 30 above and in view of Etzbach et al., (Etzbach), USPAT 5,780,629.**

17. Krueger or Bahadur or Kwarada do not explicitly disclose that the layer comprising one or more polymerizable mesogenic compounds.

Etzbach discloses polymerizable mesogenic compounds. He also discloses that using polymerizable mesogenic compounds for forming a layer is advantageous since it can be incorporated in a stable manner in any desired concentration without diffusing out of the phase or crystallizing (col. 1, lines 56-61)

Etzbach is evidence that ordinary workers in the art would find a reason, suggestion or motivation to form layer that comprises one or polymerizable mesogenic compounds.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to form the liquid crystal film of Krueger or Bahadur or Kwarada from a layer comprising one or more polymerizable mesogenic compounds so that it can be incorporated in a stable manner in any desired concentration without diffusing out of the phase or crystallizing, as per the teachings of Etzbach.

Accordingly, claim 37 would have been obvious.



**18. Claims 2, 3, 20, 31, 32, 41 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krueger or Bahadur or Kawarada and in view of Yaniv, USPAT 5,281,450.**

19. Krueger discloses in the abstract, a liquid crystal film or layer with homeotropic alignment, wherein the homeotropic alignment is achieved by an aligning layer on a substrate, and wherein the aligning layer is a smooth  $\text{Al}_2\text{O}_3$  layer.

Bahadur discloses a liquid crystal film or layer with homeotropic alignment (see Fig. 5.13c) characterized that the homeotropic alignment is achieved by an aligning layer on a substrate (see Fig. 5.13c) and the aligning layer is an inorganic layer (the aligning layer is  $\text{SiO}$  or  $\text{Al}$  or  $\text{Al}_2\text{O}_3$ , see Fig. 5.13 description and table 5.3).

Krueger and Bahadur disclose the claimed invention, as described above, except for the substrate being formed of a polymeric material/ plastic material and is used for as transparent food packaging.

However, Yaniv discloses that substrates may be formed of from any substantially transparent materials such as clear plastic or other polymeric material which may be either rigid or flexible wherein considerations such as hardness and optical clarity are of paramount importance (col. 4, lines 47-55).

Yaniv is evidence that ordinary workers in the art would find a reason, suggestion or motivation to use a plastic substrate.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate a polymeric/ plastic substrate in the liquid crystal alignment film of Bahadur or Krueger since it will increase display flexibility.

Further, using the finished product for transparent food packaging is considered as intended use and thus would have been obvious.

Also, according to applicant's own admission (page 19, lines 9-22), aluminum coated PET is commercially available and are known to be used in transparent food packaging.

As to the limitation of aluminum layer having fewer pores than aluminum oxide layers prepared by evaporation methods or sputtering, it is common and known in the art that a sufficiently smooth (fewer pores) aluminum oxide layer provides a desired high reflectivity and thus would have been obvious.

Accordingly, claims 41 and 42 would have been obvious.

#### ***Allowable Subject Matter***

20. Claim 38 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Response to Arguments***

21. Applicant's arguments filed on 10/17/03 have been fully considered but they are not persuasive.

22. In response to applicant's argument that the amended claims characterize The degree of smoothness, it is respectfully pointed out to applicant that the newly added limitation fails to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the

Art Unit: 2871

application was filed, had possession of the claimed invention and further applicant attention is also respectfully requested to the 112 second paragraph rejection. It is also pointed out to applicant all of the references disclose that homeotropic alignment is achieved by an aligning layer wherein the aligning layer is an  $\text{Al}_2\text{O}_3$ . As to the limitation of the surface being smooth, all the layers are considered smooth unless otherwise disclosed not be smooth.

In response to applicant's argument that none of the cited references show or suggest the use of plastic substrate, it is respectfully pointed out to applicant that the use of plastic substrate is disclosed in Yaniv as well as commercially available and well known in the art as admitted by applicant (page 19, lines 9-22).

In response to applicant's argument regarding claim 41, it is respectfully pointed out to applicant that aluminum oxide layers with fewer pores than the aluminum oxide layers prepared by evaporation methods or sputtering are considered as smooth aluminum oxide layers and it is known that smooth aluminum oxide layer provides a desired high reflectivity.

### ***Conclusion***

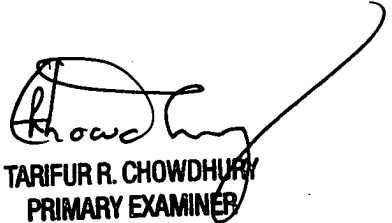
23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tarifur R Chowdhury whose telephone number is (571) 272-2287. The examiner can normally be reached on M-Th (6:30-5:00) Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2871

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TRC  
March 02, 2004



TARIFUR R. CHOWDHURY  
PRIMARY EXAMINER